Water Acquisition and Management Subcommittee Position Paper:
Floodplain Lakes and Flood Flow Retention Basins

Introduction and Background:

The Water Acquisition and Management (WAM) subcommittee has developed a listing of potential water sources and water management options that might provide supplemental flows to aid meeting the goals of the Middle Rio Grande (MRG) ESA Collaborative Program. These options include the possibility of retaining flood-flow water in ponds or lakes located along the floodplain of the MRG. The intent of retaining flood-flow water is to provide a short-term source of water for release in the event of reduced flows. The most likely application for this procedure is for the capture of excess water form summer thunderstorms.

This discussion focuses its consideration on existing facilities within the middle Rio Grande. Specifically, three wildlife refuges or management areas currently exist within the middle Rio Grande valley. Bosque del Apache and Sevilleta are National Wildlife Refuges managed by the U. S. Fish and Wildlife Service. The Ladd S. Gordon Waterfowl Management Complex is managed by the New Mexico Department of Game and Fish (NMDGF) and consists of four waterfowl areas: Belen, Casa Colorada, Bernardo, and La Joya.

Assessment:

Based on current conditions, the ponds located on Bernardo and La Joya are the only feasible locations for consideration of retaining floodwater for future river release. Bosque del Apache is located south of Socorro and water released from this facility would be available only below San Marcial,. Sevilleta is located north of San Acacia, but currently has very little pond development.

Of the four Game and Fish waterfowl areas, only Bernardo and La Joya have developed ponds. The purpose of these ponds is to provide winter-feeding and resting habitat for migratory waterfowl. Under their present operation, water is retained in the ponds from October through February. The surface acreage of all ponds combined is approximately 1,100 acres; the average depth of the ponds is about 3 feet. The total storage capacity of the ponds is estimated at 3000 to 3500 acre-feet.

The largest logistical concern with storing and releasing water from these facilities is the current inlet and outlet operations. In some cases, it takes about 2 weeks to fill the ponds, and at least the same time to drain them. Further, the ponds are designed to empty into the Unit 7 drain. Direct discharge to the river is not possible, so the water would not be available above San Acacia without developing a new discharge configuration. The entire system's capabilities are limited by the maximum capacity of the Middle Rio Grande Conservancy District (MRGCD) delivery system.

There are also biological concerns. Once the ponds are filled in October, water continues to flow through the ponds to produce a flushing action. This prevents water stagnation and minimizes

disease concerns, such as avian cholera and avian botulism. Water retained during spring and summer months would need to be retained for very short periods to alleviate this concern. The presence of water during the spring and summer months may create an ideal situation for the invasion of undesirable non-native weed species. Additionally, summer storage of water generates concern about mosquito habitat and associated west Nile virus.

Water quantity and quality may pose problems to effective storage during spring and summer months. Long term storage is subject to considerable reduction due to evaporative loss which tend to reach maximum rates during June and July along the middle Rio Grande. On average, 7 days of storage in the La Joya ponds could lead to 2.5 to 3.0 inches of evaporation loss in June and July, 2.0 to 2.5 inches of loss in August, and 1.5 to 2.0 inches of loss in September. The resulting loss to the entire 1100 surface acres for one week of storage would be 230 to 275 acre-feet of evaporative loss in June or July, 180 to 230 acre-feet of loss for one week in August, or 140 to 180 acre-feet of loss for one week of storage in September. Evaporation of large quantities of water will concentrate natural and artificial contaminants (i.e. salinity, decaying vegetation, herbicides, and pesticides) resulting in compromised water quality.

There is an additional concern related to the interruption of "natural cycles". At the end of the winter migratory period, remaining water is currently released from the ponds in February to reduce the potential for creating waterfowl reproductive habitat causing waterfowl to stay in the valley and become residents instead of migrating north. There is also a possibility that capturing peaking river flows associated with large rain events may disrupt the natural river processes.

The final major concern is of a legal nature. Spring and summer storage of water in the ponds in the Middle Rio Grande valley would require approval from the Office of the State Engineer (OSE).

Conclusions:

1. Potentials exist for utilizing the Bernardo and La Joya ponds for temporary short-term flood-flow retention and release. Potentials also exist to develop new ponds on Sevilleta for the same purpose. However, such operations would require renovating or replacing the inlet and outlet structures for the ponds, and addressing biological and legal concerns.

2. Additional investigation and evaluation through a pilot project is required to define the physical logistics of capturing flood flows. For example, how will the timing and volume of flood flow diversions be determined? How will flood flow water be delivered and captured?

3. Additional administrative concerns would need to be addressed. For example, who wil determine when flood flow should be captured? And, who will be responsible for assuring that flood flow is appropriately captured, retained, and released?

4. Based on the identified concerns, floodplain lakes and flood flow retention basins may have a potential for providing water to the river during dry periods. However, this

alternative should be considered after other more feasible and long term alternatives have been exhausted.

Water Use and Sources:

The following is a partial list of the authorization for water use and storage at the Bernardo and La Joya Waterfowl Areas:

1. By contract dated October 21, 1960 between Bureau of Reclamation (USBR), NMDGF, and MRGCD the diversion of as much water as necessary to maintain specified elevation at the six lakes on the La Joya waterfowl area is allowed from the Sabinal Riverside Drain. This diversion is allowed only during the period from October 1 to February 1. This contract was entered into as mitigation for the construction and extension of the unit 7 drain.

2. By contract dated August 9, 1973 between USBR, NMDGF and MRGCD, the diversion of up to 600 acre feet to irrigate 200 acres was authorized. The Department is to pay MRGCD an assessment for any lands irrigated in excess of 200 acres. This contract does not affect the 1960 contract in any way.

3. Application for an alternate point of diversion (supplemental well) was approved by the OSE on December 1, 1977. This permit allowed the diversion of 572.49 acre feet from all sources for application to 190.83 acres. A pond 44 acres in size, to be maintained only during winter months was approved as part of the 190.83 acres.